

**REMARKS**

Claims 1 to 39 were pending in the application at the time of examination.

The specification is amended to correct minor typographical and grammatical errors.

Claims 5, 13, 29, and 37 are cancelled without prejudice.

Claims 1, 6, 9, 11, 14, 18, 25, 27, 30, 33, 35, 38, and 39 are amended.

More particularly, Claims 1, 9, 25, 33 and 38 are amended to recite in part "has an input parameter" as required by the Examiner.

Further, Claims 14 and 18 are amended to recite in part "a memory having stored therein at least a portion of an application for generating factored assert chains for a program from assert statements, said application comprising:", and "a processor coupled to said memory, said processor for executing said at least a portion of said application".

Further, Claims 25 and 30 are amended to recite in part "A computer-based apparatus".

Further, Claims 1, 6, 14, 18, 25, 30, 38, and 39 are amended to recite in part "wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program".

Further, Claim 14 is further amended to recite in part "for a program" and "an assert chain creator coupled to said available assert statement determiner and to said variable use traverser, said assert chain creator for generating factored assert chains from assert statements associated with a program".

Further, Claim 18 is amended to recite in part "an assert statement generator, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program".

Additionally, Claims 1, 9, 11, 27, 33, 35, and 38 are amended to reflect proper antecedent basis and recite in part "statement S".

Applicants submit the above amendments are supported by the specification as originally filed and that no new matter has been added. See for example at least Applicants' specification at page 7, lines 25-29 and the Claims as filed.

Applicants respectfully request entry of the amendments and remarks herein and reconsideration of the application.

Claims 1-4, 6-12, 14-28, 30-36, and 38-39 are presented for examination.

#### Acceptance of the Drawings

Applicants respectfully bring to the Examiner's attention that the Examiner did not mark an indication in Block 10 of the Office Action Summary (PTOL-326) as to whether the drawings as filed were accepted or objected. As the Examiner did not indicate otherwise in the body of the Office Action, Applicants assume that the drawings as filed are accepted by the Examiner and that no correction is required.

Applicants respectfully request an indication by the Examiner of the acceptance of the drawings in the next Office Action.

#### Objections

In the Office Action at page 2, the Examiner stated:

Claims 1, 9, 25, 33 and 38 are objected to because of the following informalities: claims 1, 9, 25, 33 and 38 recite "...has as input parameter..." (in lines 2, 1, 1, 4, respectively) instead of --has an input parameter--. Appropriate correction is required.

Applicants have amended Claims 1, 9, 25, 33 and 38 to recite "has an input parameter" as required by the Examiner.

Accordingly, Applicants respectfully submit Claims 1, 9, 25, 33 and 38 overcome the Examiner's objection. Applicants respectfully request reconsideration and withdrawal of the objections to Claims 1, 9, 25, 33 and 38.

Rejections under 35 U.S.C. §101

In the Office Action at page 2, the Examiner rejected Claims 14-37 under 35 U.S.C. 101 "because the claimed invention is directed to non-statutory subject matter".

Regarding Claims 14, 18, 25, and 30, at pages 2-3 the Examiner stated in part:

Claims 14, 18, 25 and 30 are non-statutory as being "An apparatus" without being supported by hardware such as a tangible computer storage or execution engine, which would enable one skill in the art to construe that the apparatus is built from tangible product to carry out any functionality being conveyed from the claim...

...Claims 15-17, 19-24, 26-29 and 31-37 are rejected for failing to cure the deficiencies of the above rejected non-statutory claims 14, 18, 25 and 30 above.

Applicants have amended Claims 14 and 18 to recite in part "a memory having stored therein at least a portion of an application for generating factored assert chains for a program from assert statements, said application comprising:", and "a processor coupled to said memory, said processor for executing said at least a portion of said application".

Further Applicants have amended Claims 25 and 30 to recite a "computer-based apparatus". Applicants respectfully submit Claims 14, 18, 25 and 30 as amended recite statutory subject

matter and overcome the Examiner's rejections. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 101 rejections of Claims 14, 18, 25 and 30.

Claims 15-17, 19-24, 26-29 and 31-37, respectively depend directly or indirectly from Claims 14, 18, 25 and 30, and as such also overcome the Examiner's rejection. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 101 rejections of Claims 15-17, 19-24, 26-29 and 31-37.

Rejections under 35 U.S.C. §102(b)

In the Office Action at page 3, the Examiner rejected Claims 1-39 under 35 U.S.C. 102(b) as being anticipated by Burke et al. (US 5,448,737), hereinafter Burke.

Claims 1, 6, 14, 18, 25, 30, 38, and 39 are not anticipated by and are patentable over Burke

Claim 1

Applicants have amended Claim 1.

To anticipate a claim, the MPEP directs:

**TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM**

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

MPEP 2131, 8th Edition, Rev. 5, pg. 2100-67 (Aug. 2006).

Applicants' Claim 1 recites in part at least:

...for each statement *S* in *X*:  
    finding each variable use in the statement *S*;  
    for each variable use in the statement *S*:  
        determining if there is an available  
assert statement which defines information about  
the corresponding variable for the variable use,  
**wherein an assert statement is a statement  
identifying known information regarding a variable  
at a specific point in said program;**  
        making an assert chain from the variable  
use to the available assert statement if there is  
an available assert statement which defines  
information about the corresponding variable for  
the variable use... (emphasis added)

With regard to the rejection of Claim 1 in the Office  
Action at page 4, the Examiner stated in part that Burke  
discloses:

...making an assert chain from the variable use to  
the available assert statement if there is an  
available assert statement which defines information  
about the corresponding variable for the variable use  
(col. 10: 15-25 "...data flow chains is achieved by  
constructing a data structure which includes an AllDef  
table and an All Use table..." )....

Burke at col. 10, lines 15-25 describes:

**B. Connecting the Data Flow Chains**

Connecting the data flow chains is achieved by  
constructing a data structure which includes an AllDef  
table and an AllUse table. **The AllDef table has  
information for every definition site in the program  
and the AllUse table has information for every use in  
the program.** The two data structures contain the  
original definitions and uses of the program (i.e.,  
the original assignments) and the placed  $\Phi$ -functions.  
The present invention creates new definitions and uses  
at the  $\Phi$ -functions. (emphasis added)

Applicants respectfully submit that the cited reference to Burke relied on by the Examiner merely describes that the AllDef table and the AllUse table are used to connect data flow chains that are def-use, def-def, use-def and/or use-use chains. Burke at col. 7, lines 25-29 specifically describes that the data flow chains referenced in the above citation are "i.e., def-use, def-def, use-def and/or use-use chains." Def-use, def-def, use-def and use-use chains are distinguishable from a variable use to an assert statement chain. And more particularly, definitions and uses as described in Burke are distinguishable from assert statements as described in Applicants' specification.

Applicants' specification at [0015] describes in part:

an assert statement is generally a statement inserted into the code that identifies known information regarding a variable at a specific point in the program. Essentially, they make explicit what is normally just implicit in a program.

Applicants submit an assert statement provides information, such as a specific value, about a variable at a specific point in a program. Differently, the data flow chains described in Burke are built from definitions and uses defined in the program code and thus can change through out program execution. Thus, the above citation does not describe or suggest at least "making an assert chain from the variable use to the available assert statement if there is an available assert statement which defines information about the corresponding variable for the variable use" in which an assert statement is "a statement identifying known information regarding a variable at a specific point in said program" as recited in part in Applicants' Claim 1.

Accordingly, Applicants respectfully submit Claim 1 is not anticipated by and is patentable over Burke. Applicants

respectfully request reconsideration and withdrawal of the anticipation rejection of Claim 1.

Claims 2-4 depend from Claim 1 and so distinguish over Burke for at least the same reasons as Claim 1. Applicants request reconsideration withdrawal of the anticipation rejections of Claims 2-4. Claim 5 is cancelled without prejudice.

Applicants have amended Claim 25. Claim 25 was rejected upon the same basis as Claim 1 and thus is patentable over Burke for at least the same reasons as Claim 1. Applicants request reconsideration and withdrawal of the anticipation rejection of Claim 25.

Claims 26-28 depend from Claim 25 and so distinguish over Burke for at least the same reasons as Claim 25. Applicants request reconsideration and withdrawal of the anticipation rejections of Claims 26-28. Claim 29 is cancelled without prejudice.

Applicants have amended Claim 38. Claim 38 was rejected upon the same basis as Claim 1 and thus is patentable over Burke for at least the same reasons as Claim 1. Applicants request reconsideration and withdrawal of the anticipation rejection of Claim 38.

#### Claim 6

Applicants have amended Claim 6.

With regard to the rejection of Claim 6 in the Office Action at page 5, the Examiner stated in part that Burke discloses:

...generating one or more assert statements in a basic block of the program (col. 10: 15-25 "...data flow chains is achieved by constructing a data structure which includes an AllDef table and an All Use table..." )....

Applicants' Claim 6 recites in part at least:

...generating one or more assert statements in a basic block of the program, **wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program...** (emphasis added)

For at least the reasons earlier described with reference to the anticipation rejection of Claim 1, Applicants respectfully submit that the cited reference to Burke relied on by the Examiner does not describe or suggest at least "generating one or more assert statements in a basic block of the program, wherein an assert statement is a statement identifying known information regarding a variable regarding a variable at a specific point in said program" as recited in part in Applicants' Claim 6.

Accordingly, Applicants respectfully submit Claim 6 is not anticipated by and is patentable over Burke. Applicants respectfully request reconsideration and withdrawal of the anticipation rejection of Claim 6.

Claims 7-12 depend from Claim 6 and so distinguish over Burke for at least the same reasons as Claim 6. Applicants request reconsideration withdrawal of the anticipation rejections of Claims 7-12. Claim 13 is cancelled without prejudice.

Applicants have amended Claim 30. Claim 30 was rejected upon the same basis as Claim 6 and thus is patentable over Burke for at least the same reasons as Claim 6. Applicants request reconsideration and withdrawal of the anticipation rejection of Claim 30.

Claims 31-36 depend from Claim 30 and so distinguish over Burke for at least the same reasons as Claim 30. Applicants request reconsideration and withdrawal of the anticipation



rejections of Claims 31-36. Claim 37 is cancelled without prejudice.

Applicants have amended Claim 39. Claim 39 was rejected upon the same basis as Claim 6 and thus is patentable over Burke for at least the same reasons as Claim 6. Applicants request reconsideration and withdrawal of the anticipation rejection of Claim 39.

Claim 14

Applicants have amended Claim 14.

With regard to the rejection of Claim 14 in the Office Action at page 8, the Examiner stated in part that Burke discloses:

...an assert chain creator coupled to said available assert statement determiner and to said variable use traverser; and  
an assert chain search procedure iterative caller coupled to said statement traverser (e.g. ,Fig. 8, element 845 and related text).

Applicants' Claim 14 recites in part at least:.

An apparatus for generating factored assert chains for a program from assert statements, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program..

...an assert chain creator coupled to said available assert statement determiner and to said variable use traverser, said assert chain creator for generating factored assert chains from assert statements associated with a program... (emphasis added)

As earlier described with reference to the anticipation rejection of Claim 1, Applicants respectfully submit that the cited reference to Burke relied on by the Examiner does not

describe or suggest at least "an assert chain creator coupled to said available assert statement determiner and to said variable use traverser, said assert chain creator for generating factored assert chains from assert statements associated with a program" as recited in part in Applicants' Claim 14.

The reference to Fig. 8, element 845, and related text relied on by the Examiner is similarly concerned with compact data flow representation and connection of def-def, def-use, use-def, and use-use chains. Indeed, with reference to FIG. 8, Burke at col. 7, lines 36-39 describes in part:

The data flow framework is concerned with data flow problems that can be solved by solving the following four chains: def-def, def-use, use-def, and use-use.

Accordingly, Applicants respectfully submit Claim 14 is not anticipated by and is patentable over Burke. Applicants respectfully request reconsideration and withdrawal of the anticipation rejection of Claim 14.

Claims 15-17 depend from Claim 14 and so distinguish over Burke for at least the same reasons as Claim 14. Applicants request reconsideration withdrawal of the anticipation rejections of Claims 15-17.

#### Claim 18

Applicants have amended Claim 18.

With regard to the rejection of Claim 18 in the Office Action at page 9, the Examiner stated in part that Burke discloses:

...an assert statement generator (e.g., Fig. 8, 845 and related text)...

Applicants' Claim 18 recites in part at least:

...an assert statement generator, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program... (emphasis added)

As earlier described with reference to the anticipation rejection of Claims 1 and 14, Applicants respectfully submit that the cited reference to Burke relied on by the Examiner does not describe or suggest at least "an assert statement generator, wherein an assert statement is a statement identifying known information regarding a variable at a specific point in said program" as recited in part in Applicants' Claim 18.

Accordingly, Applicants respectfully submit Claim 18 is not anticipated by and is patentable over Burke. Applicants respectfully request reconsideration and withdrawal of the anticipation rejection of Claim 18.

Claims 19-24 depend from Claim 18 and so distinguish over Burke for at least the same reasons as Claim 18. Applicants request reconsideration withdrawal of the anticipation rejections of Claims 19-24.

#### Conclusion

Claims 1-4, 6-12, 14-28, 30-36, and 38-39 remain in the application. For the foregoing reasons, Applicants respectfully request allowance of all pending claims. If the Examiner has any questions relating to the above, the Examiner is respectfully requested to telephone the undersigned Attorney for Applicant(s).

#### Request for Examiner Interview

Should the Examiner be of the opinion that this amendment does not place the Application in a condition for allowance,

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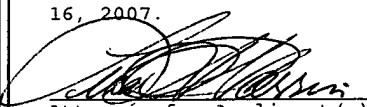
Amendment and Response dated February 16, 2007

Reply to Office Action of January 29, 2007

Applicants respectfully request an Examiner interview prior to issuance of the next communication from the USPTO to expedite prosecution.

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on February 16, 2007.

  
Attorney for Applicant(s)

February 16, 2007  
Date of Signature

Respectfully submitted,



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